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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/817,205	04/02/2004	Karelle L. Cornwell	STL919960054US2/1737CIP	2205

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EXAMINER

LIN, SHEW FEN

ART UNIT PAPER NUMBER

2166

DATE MAILED: 10/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/817,205

Applicant(s)

CORNWELL ET AL.

Examiner

Shew-Fen Lin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 4/2/04.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>4/2/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

- a. This action is responsive to communications: application filed on 4/2/2004.
- b. Claims 1-33 are pending in this Office Action. Claims 1, 12, and 23 are independent claims.

Priority

Applicant's claim for the benefit of a prior-filed application 08/735,168, filed on 10/22/1996 under 35 U.S.C. 119(e) or under 35 U.S.C. 120, 121, or 365(c) is acknowledged.

Since the provisional application relied on part of the priority document (Continuation-in-Part), the claim of priority will be considered on a claim-by-claim basis. The priority date of the instant application is at least 4/2/2004 (the filing date), but depending upon the specific material claimed, could be as early as 10/22/1996.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned

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with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 2, 13, and 24 rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 11, and 21 of U.S. Patent No. 6,754,656 in view of Mohan (US Patent 5,247,672). Mohan discloses a transaction processing system and method without locking the committed pages (abstract). It would be obvious to access the page without requiring to obtain unnecessary locks as taught by Mohan for all the reasons disclosed by Mohan such as, "allows transaction to complete significantly faster where most of the data being accessed has been committed" (column 4, lines 68, column 5, lines 1-2).

The following table shows the claims in Instant Application that are rejected by corresponding claim(s) in U.S. Patent No. 6,754,656.

<i>Claims Comparison Table</i>		
	Instant Application	U.S. Patent No. 6,754,656
Claim #	1+2	1
Claim #	12+13	11
Claim #	23+24	21

Claim Rejections – 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1, 7-12, and 14-22 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. They merely present an abstract idea without any practical application that produces a useful, concrete, and tangible result.

As per claim 1, the claimed process, “partitioning a table...., receiving a request...., determining a partition..., determining if the data has been committed; and if so, avoiding locking the partition in response to the request”. The last step of the claim rites a determining step. Since mere determination is not a tangible result, the claim fails to recite a tangible result as the determining step is not tangible.

Regarding claims 7-11 depend from rejected claim 1, comprise the same deficiencies as those claims directly or indirectly by dependence, and are therefore rejected on the same basis.

Claim 12 recites the same limitations as claim 1, therefore, is rejected under the same rationale. In addition, even the preamble recites "a database system", there is no evidence in the specification that a term or phrase which may be interpreted as software, hardware or combinations thereof necessarily includes hardware (memory, processor), it should be interpreted in its broadest reasonable sense as software. In addition, all elements of the claims such as "a table", “partitions”, and "locking" are not physical structural element, but instead application program, or software. These claims are therefore non-statutory subject matter because they are software per se, and not tangibly embodied.

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Regarding claims 14-22 depend from rejected claim 12, comprise the same deficiencies as those claims directly or indirectly by dependence, and are therefore rejected on the same basis.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 23 and 30-32 rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: if the determining step “determining if the data has been committed” is not valid, no step is taken.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point

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out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mohan (US Patent 5,247,672) in view of Crus et al. (US Patent 4,716,528, hereinafter referred as Crus).

As to claim 1, Mohan discloses a method for controlling concurrency of access to data in a database system (column 1, lines 7-16), comprising: (a) partitioning a table in the database system into a plurality of partitions (pages, column 1, lines 46-50); (b) receiving a request for access to data (column 1, lines 51-55); (c) determining a partition of the plurality of partitions that contains the data (select page, column 3, lines 14-18, column 4, lines 23-26); (d) determining if the data has been committed (compare page_LSN and committed_LSN, column 5, lines 17-21); and (e) if so, avoiding locking the partition in response to the request (read page without locking, column 5, lines 21-23).

Mohan discloses storages are divided into pages as noted above but does not explicitly disclose dividing a table into a plurality of pages (partition).

Crus discloses dividing tables into equal-sized units called "pages" (Figure 2, column 3, lines 3-8).

It would have been obvious to a person of ordinary skill in the art at the time of invention was made to modify Mohan's disclosure to divide tables into pages (partitions) as taught by Crus for the purpose of locking individual page instead of tables (column 3, lines 9-24, Crus). The

skilled artisan would have been motivated to improve the invention of Mohan per the above such that page locking provides concurrent access to tables (column 3, lines 22-24, Crus).

As to claim 2, Mohan discloses further comprising: (f) if it cannot be determined whether the data has been committed (column 5, lines 26-29); (f1) locking the partition in response to the request (column 5, lines 29-31); and (f2) granting access to the partition (access selected pages when lock is granted, column 2, lines 11-17, column 3, lines 22).

As to claim 3, Mohan discloses the method of claim 2, wherein granting access to the partition includes serializing access to the partition at a lock state (FIFO, column 2, lines 11-17, column 6, lines 40-43).

As to claim 4, Mohan discloses the method of claim 3, wherein locking the partition includes locking the partition at the lock state and serializing access to the partition includes permitting access to the partition for access requests that are compatible with the lock state (column 6, lines 5-23).

As to claim 5, Mohan discloses the method of claim 4, wherein the access to the data comprises access by a plurality of applications through a single database system (one or more processes, Figure 10, T1-T4, column 3, lines 5-8, column 10, lines 66-67). Furthermore, Crus discloses multiple processes (application) concurrently access a relational database system (column 2, lines 10-17).

As to claim 6, Mohan discloses the method of claim 2, wherein the access to the data comprises access by a plurality of database system (shared database system, column 10, lines 63-65, lines 67-78, column 11, lines 1-6).

As to claim 7, Mohan discloses wherein receiving a request for access includes receiving a request for a record in the table (column 1, lines 45-50. lines 64-68).

As to claim 8, Mohan discloses wherein receiving a request for access includes receiving a request to lock the partition (column 8, lines 24-29).

As to claim 9, Mohan discloses the method of claim 8, wherein the request is a request for a shared lock (column 5, lines 63-68).

As to claim 10, Mohan discloses the method of claim 8, wherein the request is a request for an exclusive lock (column 5, lines 63-68).

As to claim 11, Mohan discloses the method of claim 4 but does not explicitly disclose further including receiving a lockmax value, accumulating for an application, a number of requests for access to the records in the table by the application, comparing the number of requests with the lockmax value, and, when the number of requests equals the lockmax value, escalating the lock state.

Crus discloses receiving a lockmax value accumulating for an application, a number of requests for access to the records in the table by the application, comparing the number of requests with the lockmax value, and, when the number of requests equals the lockmax value, escalating the lock state (column 1, lines 64-68, column 2, lines 1-7, column 4, lines 3-19).

It would have been obvious to a person of ordinary skill in the art at the time of invention was made to modify Mohan's disclosure to dynamically escalates the locking protocol on the tables from page to table locking as taught by Crus for the purpose of efficiently managing granularity lock based on the number of small granularity locks held on a resource reaches a specified limit (column 1, lines 64-68, column 2, lines 1-2, Crus). The skilled artisan would have been motivated to improve the invention of Mohan per the above to optimum locking between the concurrency (lock granularity) and system throughput (number of locks).

As to claim 12, is directed to a computer system carrying instructions for performing the methods of claim 1 and is rejected along the same rationale.

As to claim 13, is directed to a computer system carrying instructions for performing the methods of claim 2 and is rejected along the same rationale.

As to claim 14, is directed to a computer system carrying instructions for performing the methods of claim 3 and is rejected along the same rationale.

As to claim 15, is directed to a computer system carrying instructions for performing the methods of claim 4 and is rejected along the same rationale.

As to claim 16, is directed to a computer system carrying instructions for performing the methods of claim 6 and is rejected along the same rationale.

As to claim 17, is directed to a computer system carrying instructions for performing the methods of claim 5 and is rejected along the same rationale.

As to claim 18, is directed to a computer system carrying instructions for performing the methods of claim 11 and is rejected along the same rationale.

As to claim 19, is directed to a computer system carrying instructions for performing the methods of claim 7 and is rejected along the same rationale.

As to claim 20, is directed to a computer system carrying instructions for performing the methods of claim 8 and is rejected along the same rationale.

As to claim 21, is directed to a computer system carrying instructions for performing the methods of claim 9 and is rejected along the same rationale.

As to claim 22, is directed to a computer system carrying instructions for performing the methods of claim 10 and is rejected along the same rationale.

As to claim 23, is directed to a computer readable medium carrying instructions for performing the methods of claim 1 and is rejected along the same rationale.

As to claim 24, is directed to a computer readable medium carrying instructions for performing the methods of claim 2 and is rejected along the same rationale.

As to claim 25, is directed to a computer readable medium carrying instructions for performing the methods of claim 3 and is rejected along the same rationale.

As to claim 26, is directed to a computer readable medium carrying instructions for performing the methods of claim 4 and is rejected along the same rationale.

As to claim 27, is directed to a computer readable medium carrying instructions for performing the methods of claim 5 and is rejected along the same rationale.

As to claim 28, is directed to a computer readable medium carrying instructions for performing the methods of claim 6 and is rejected along the same rationale.

As to claim 29, is directed to a computer readable medium carrying instructions for performing the methods of claim 7 and is rejected along the same rationale.

As to claim 30, is directed to a computer readable medium carrying instructions for performing the methods of claim 8 and is rejected along the same rationale.

As to claim 31, is directed to a computer readable medium carrying instructions for performing the methods of claim 9 and is rejected along the same rationale.

As to claim 32, is directed to a computer readable medium carrying instructions for performing the methods of claim 10 and is rejected along the same rationale.

As to claim 33, is directed to a computer readable medium carrying instructions for performing the methods of claim 11 and is rejected along the same rationale.

Related Prior Arts

The following list of prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Choy; David M. et al., US 5551027 A, “multi-tiered indexing method for partitioned data”
- Mohan; Chandrasekaran, US 5247672 A, “Transaction processing system and method with reduced locking”
- Mohan; Chandrasekaran et al., US 5455942 A, “Partial page write detection for a shared cache using a bit pattern written at the beginning and end of each page”

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- Raz; Yoav, US 5504900 A, "Commitment ordering for guaranteeing serializability across distributed transactions"
- Shoens; Kurt A. et al., US 4965719 A, "Method for lock management, page coherency, and asynchronous writing of changed pages to shared external store in a distributed computing system"

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shew-Fen Lin whose telephone number is 571-272-2672. The examiner can normally be reached on 8:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain Alam can be reached on 571-272-3978. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Shew-Fen Lin
Patent Examiner



Art Unit 2166
October 23, 2006



HOSAIN ALAM
SUPERVISORY PATENT EXAMINER